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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/817,290

04/02/2004

Marc Timothy Jones

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EXAMINER

TRUONG, CAMQUY

ART UNIT

PAPER NUMBER

2195

MAIL DATE

DELIVERY MODE

08/02/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/817,290

Applicant(s)

JONES ET AL.

Examiner

Camquy Truong

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 May 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-46 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8, 11-13, 15-17, 21-29, 32-34, 36-38 and 42-46 is/are rejected.
- 7) ☒ Claim(s) 9-10, 14, 18-20, 30-31, 35 and 39-41 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>12/18/06</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 1-46 are presented for examination.
2. It is noted that although the present application does contain line numbers in the specification and claims, the line numbers in the claims do not correspond to the preferred format. The preferred format is to number each line of every claim, with each claim beginning with line 1. For ease of reference by both the examiner and Applicant all future correspondence should include the recommended line numbering.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.
4. Claims 43-46 are rejected under 35 U.S.C 112, second paragraph, as being indefinite for failing to particularly as the invention.
 - A. Claims 43-46 are indefinite because it is unclear whether they are independent or dependent claims.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

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invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1-8, 11-13, 15, 21-29, 32-34, 36, and 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Flynn et al. (U.S. Patent 5,155,854) in view of Kobayashi (U.S. Patent 7,146,430 B2), and further in view of Miller (U.S. Patent 5,408,663).

7. As to claims 1, and 22, Flynn teaches the invention substantially as claimed including: a method for scheduling a plurality of tasks in a processing system having a plurality of defined resources, comprising:

identifying prerequisites for each task, the prerequisites representing all defined resources needed for that task to execute to completion (for each command, the specific set of system resources that are essential to execution of the command are identified and a table correlating specified commands to corresponding required resources is generated, col. 14, lines 1-5);

in a task priority order (incoming requests at the ports in order to prioritize them appropriately for selecting a single request, col. 4, line 61 - col. 5, line 12; col. 11, line 55 - col. 12, line 60; col. 19, lines 42-50), comparing the prerequisites for a particular task against a system state representing a current state of the defined resources until a task is identified for which the comparison reveals that the prerequisites for the identified task are currently available (in order to identify those requests for which all required resources are available, the two vectors resource require (RR) vector, and resource available (RA) vector are compared, col. 5, lines 13-24, col. 7, lines 47-56);

dispatching the identified task (subsequently received honoring requests for which required resources are become available, col. 5, lines 22-24; col. 7, lines 40-42).

8. Flynn does not explicitly teach identifying one or more higher priority task paths and one or more lower priority task; task priority order determined in accordance with the higher priority task paths and the lower priority task paths. However, Kobayashi teaches teach identifying one or more higher priority task paths and one or more lower priority task paths (when the load on the path to other communication party is high or low, col. 25, lines 59-62); task priority order determined in accordance with the higher priority task paths and the lower priority task paths (a priority to be given to each source of request is determined depending on the load on the path to other communication party. When the load on the path to the other communication party is high, the priority is set low and when the load on the path to the other communication party is low, the priority is set high, col. 25, lines 47-67).

9. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of identifying one or more higher priority task paths and one or more lower priority task paths; task priority order determined in accordance with the higher priority task paths and the lower priority task paths as taught by Kobayashi because this allows taking a path by bypassing high-load links, lowering the traffic priority of the high load link.

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10. Flynn and Kobayashi do not explicitly teach each of the paths having a plurality of tasks in series. However, Miller teaches each of the paths having a plurality of tasks in series (col. 1, lines 33-41).

11. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of each of the paths having a plurality of tasks in series as taught by Miller to the invention of Flynn and Kobayashi because this allows to optimize schedule through a better use of available resources by altering the duration of task path.

12. As to claims 2-3, 21, 23-24, 42, Flynn teaches:

arranging the task priority order such that the tasks in the priority task paths have a higher priority than other tasks (col. 19, lines 42-50).

13. As to claims 4-5, 25-26 Flynn teaches:

identifying one or more fast paths in a task processing sequence; and for a given fast path (col. 8, lines 14-17),

arranging the task priority order such that the tasks in the given fast path have a higher priority than other tasks (col. 17-21).

14. As to claims 6, 27, Flynn teaches representing each defined resource by one or more resource flags that provide information about that resource (col. 14, line 55 –col. 15, line 7).

15. As to claims 7, 28, Flynn teaches:

storing the prerequisites for each task as a collection of resource flags known as a prerequisite row (col. 14, lines 34-46) and storing the system state as a collection of resource flags (col. 14, line 55 – col. 15, line 7).

16. As to claims 8, 29, Flynn teaches comparing the prerequisite row for the particular task against the system state by performing a Boolean AND of the prerequisite row and the system state (col. 15, line 54 – col. 16, line 5).

17. As to claims 11, 32, Flynn teaches updating the system state after resources are actually used (col. 14, lines 55-60).

18. As to claims 12-13, 33-34 Flynn teaches after the system state has been updated, the method further comprises implementing fair-share scheduling by resuming the comparison of prerequisite rows against the updated system state at a next row in the prerequisite table (col. 7, lines 51-56; col. 14, lines 41-46).

19. As to claims 15, 36, Flynn teaches:

creating one or more priority flags representing various priority levels as defined priority flag resources in the processing system (col. 13, lines 6-42); and

adding the priority flag resources to the prerequisites of selected tasks in accordance with priority levels desired for those tasks (col. 14, lines 19-33); wherein the priority flag resources effectively change the task priority order as the prerequisites for the selected tasks are compared against the system state (col. 14, lines 19-54).

20. Claims 16-17, 37-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Flynn et al. (U.S. Patent 5,155,854) in view of Kobayashi (U.S. Patent 7,146,430 B2), and further in view of Miller (U.S. Patent 5,408,663), as applied as claim 1 above, and further in view of Blythe et al. (U.S. Publication 2004/0139434 A1).

21. As to claims 16-17, and 37-38, Flynn, Kobayashi and Miller do not explicitly teach changing a depth of one or more queues/ buffers to alter the scheduling of tasks having those queues as prerequisites. However, Blythe teaches changing a depth of one or more queues/buffers to alter the scheduling of tasks having those queues as prerequisites (changing the size of a pool or changing the number of pools will many times affect the execution time (shorter amounts of execution time to spend less time waiting to execute) of the requests directed to the pools (paragraph 42, lines 15-17; paragraph 18, lines 1-3).

22. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of Flynn, Kobayashi, Miller and Blythe

because Blythe's changing the size of a pool would changing the time waiting to execute (schedule) of the requests would improve the efficiency of Flynn Kobayashi and Miller's system to improve the techniques for scheduling requests to threads from thread pools.

23. Claims 43-46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Flynn et al. (U.S. Patent 5,155,854) in view of Kobayashi (U.S. Patent 7,146,430 B2), and further in view of Miller (U.S. Patent 5,408,663), as applied to claim 22 above, and further in view of Applicant Admit Prior Art (AAPA).

24. As to claims 43-45, Flynn, Kobayashi, and Miller do not explicitly teach the HBA further comprising an Internet Small Computer System Interface (iSCSI) or fibre channel (FC) controller circuit. However, AAPA teaches HBA further comprising an Internet Small Computer System Interface (iSCSI) or fibre channel (FC) controller circuit (page 1, line 13 – page 2, line 3).

25. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of Flynn, Kobayashi, and Miller and AAPA because AAPA's HBA further comprising an Internet Small Computer System Interface (iSCSI) or fibre channel (FC) controller circuit would allow lead to better system performance.

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26. As to claim 46, AAPA teaches an iSCSI or a FC network is coupled to the iSCSI or FC controller circuit, respectively, and one or more storage devices are coupled to the iSCSI or FC network (page 2, lines 1-3; and lines 14-17).

Allowable Subject Matter

27. Claims 9-10, 14, 18-20, 30-31, 35, 39-41 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to the argument

28. Applicant's arguments filed 5/4/07 for claims 1- 46 have been considered but are moot in view of the new ground(s) rejection.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory

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action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Conclusion

29. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Camquy Truong whose telephone number is (571) 272-3773. The examiner can normally be reached on 8:00Am – 5:00Pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Meng-Ai An can be reached on 571-272-3756. The fax phone number for the organization where this application or proceeding is assigned is 571-273-3756. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIP. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIP system, contact the Electronic Business Center (EBC) at 866-217-9197(toll-free).

Camquy Truong

July 23, 2007


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